

## TABLE OF CONTENTS

<b>LIST OF ABBREVIATIONS</b> .....	v
<b>ABSTRACT</b> .....	ix
<b>RESUMEN</b> .....	xi
<b>INTRODUCTION</b> .....	17
<b>General introduction of breeding in Solanaceae crops</b> .....	19
<b>Breeding in eggplant</b> .....	22
<b>Breeding in tomato</b> .....	27
<b>The dawn of the age of multi-parent MAGIC populations in plant breeding:     novel powerful next-generation resources for genetic analysis and selection     of recombinant elite material</b> .....	33
<b>Abstract</b> .....	34
<b>1. Introduction</b> .....	35
<b>2. Overview of experimental populations and germplasm collection for         traits dissection</b> .....	36
<b>3. Advantages and limitations of MAGIC populations</b> .....	41
<b>4. MAGIC development strategies</b> .....	45
<b>5. Analysis software for genetic gap construction and QTL mapping</b> . 50	
<b>6. An appraisal of MAGIC populations developed and evaluated</b> .....	56
<b>8. Conclusions</b> .....	64
<b>OBJECTIVES</b> .....	75
<b>RESULTS</b> .....	81
<b>Chapter I: Eggplant MAGIC population for multiple fruit traits breeding</b> .....	83
<b>Newly developed MAGIC population allows identification of strong     associations and candidate genes for anthocyanin pigmentation in eggplant</b> .....	85
<b>Abstract</b> .....	86
<b>1. Introduction</b> .....	87
<b>2. Materials and methods</b> .....	89
<b>3. Results</b> .....	94

4. Discussion .....	103
5. Conclusion .....	106
<b>Mutations in the <i>SmAPRR2</i> transcription factor suppressing chlorophyll pigmentation in the eggplant fruit peel are key drivers of a diversified colour palette.....</b>	<b>117</b>
Abstract .....	118
1. Introduction .....	119
2. Materials and methods .....	120
3. Results.....	124
4. Discussion .....	133
<b>The irregular fruit green netting: An eggplant domestication trait controlled by the <i>SmGLK2</i> gene with implications in fruit colour diversification.....</b>	<b>147</b>
Abstract .....	148
1. Introduction .....	149
2. Materials and methods .....	150
3. Results.....	156
4. Discussion .....	163
<b>Chapter II: Development of a novel inter-specific tomato MAGIC population.....</b>	<b>173</b>
<b>A novel tomato inter-specific (<i>Solanum lycopersicum</i> var. <i>cerasiforme</i> and <i>S. pimpinellifolium</i>) MAGIC population facilitates trait association and candidate gene discovery in untapped exotic germplasm .....</b>	<b>175</b>
1. Introduction .....	177
2. Materials and methods .....	178
3. Results.....	183
4. Discussion .....	197
<b>GENERAL DISCUSSION .....</b>	<b>213</b>
<b>GENERAL CONCLUSIONS .....</b>	<b>225</b>
<b>GENERAL REFERENCES .....</b>	<b>231</b>